REMARKS

Reconsideration of this application in light of the above amendments and following comments is courteously solicited.

Initially the undersigned would like to thank Examiner Fiorilla for the courtesies extended during an oral hearing held with the undersigned on June 12, 2002. During the above noted oral hearing the outstanding official action was discussed in detail and the undersigned proposed to Examiner Fiorilla new independent claim 16 which complied with the formal requirements 35 U.S.C. 112, second paragraph and patentably defined over the cited prior art references. Examiner Fiorilla indicated that he did wish to consider the new amended claim 16 further upon submission of a formal amendment.

As discussed with Examiner Fiorilla at the above noted oral hearing, independent claim 16 sets forth with specificity the process of the present invention. More particularly, independent claim 16 sets forth the specific step of determining an enlargement factor (f) for the obtained data in accordance with the equation $f = P_S/P_R$ where P_R is the relative density of the preproduced blank and P_s is the achievable relative density after sintering. The particular step noted above is now set forth in

independent claim 16 allows for the calculation of the enlargement factor (f) which is extremely precise as indicated, for example, on line 36 of Page 9 of the instant specification.

Contrary to the process of the present invention the cited and applied prior art reference, U.S. patent 6,106,747, does not teach, disclose, suggest or render obvious the determining step of independent claim 16 employing the specific method of determining as recited therein. While the '747 patent does broadly suggest enlargement factors, the particular mechanism for determining these enlargement factors is not disclosed and, as evidence from the table in column 5 of the '747 patent, the resulting enlargement factor is relatively primitive and not specific to the same degree as the determining step in accordance with independent claim 16. The determination of the enlargement factor in accordance with the present invention leads to a very precise factor number which ultimately leads to a very precise artificial tooth substitute to be fitted onto a prepared dental stump. Clearly this enlargement factor is critical to obtaining a excellent fit. The process of the present invention clearly sets forth a mechanism for determining that

critical value and this method for determining critical value is not at all suggested by the '747 patent.

In summary, it is submitted that claim 16 as amended clearly defines over the prior art references. It is believed that the remaining dependent claims 17-31 contain patentable merit in their own right and should be independently considered by the Examiner.

An earnest and thorough attempt has been made by the undersigned to resolve the outstanding issues in this case and place same in condition for allowance. If the Examiner has any questions or feels that a telephone or personal interview would be helpful in resolving any outstanding issues which remain in this application after consideration of this amendment, the Examiner is courteously invited to telephone the undersigned and the same would be gratefully appreciated.

It is submitted that the claims as amended herein patentably define over the art relied on by the Examiner and early allowance of same is courteously solicited.

If any fees are required in connection with this case, it is respectfully requested that they be charged to Deposit Account No. 02-0184.

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231 on June 26, 2002
(Date of Deposit)
Rachel Piscitelli
(Name and Reg. No. of Attorney)
Rachel Piscitelli
(Signature)
June 26, 2002
(Date of Signature)

Respectfully submitted,

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Date: June 26, 2002

Version with markings to show changes made to the specification

On Page 1 after the title delete the first paragraph and substitute therefor the following:

BACKGROUND OF THE INVENTION

The invention relates to a process for production of an artificial tooth substitute which can be fitted on at least one preprepared dental stump, where taking into account the shrinkage, on the basis of a model, a fully ceramic skeletal structure of biologically compatible material is calculated, produced from a blank by material removal, dense-sintered and a coating material applied for individualisation. The invention also concerns a blank of porous ceramic for performance of the process.

Page 3, delete the first full paragraph and substitute therefor the following:

SUMMARY OF THE INVENTION

The task in relation to the process is solved according to the invention in that the three-dimensional outer and inner surface of a positive model of the skeletal structure for tooth crowns and/or tooth bridges are scanned and digitised, the data

enlarged linearly in all directions by an enlargement factor f compensating precisely for the sinter shrinkage, transferred to the control electronics of at least one processing machine for machining the blank of porous ceramic and suitable tool paths derived from this, temporally decoupled from digitisation, by means of control commands for tools, material is removed from a blank until the enlarged design form of a positive model is achieved which is then dense-sintered to the skeletal structure with precise end dimensions, and then individualised by facing with a coating material of porcelain or plastic. Special and further design forms of the process according to the invention are the subject of dependent claims.

Page 3, after the first full paragraph insert the following section:

BRIEF DESCRIPTION OF THE DRAWINGS

Using the design examples shown in the drawing which are the subject of dependent patent claims, the invention is explained in more detail. Diagrammatically these show:

Fig. 1 a longitudinal section through a natural dental stump with an artificial tooth crown,

Fig. 2 an enlarged detail of area A according to Fig. 1,

Fig. 3 a longitudinal section through two tooth stumps with a

three-part tooth bridge,

Fig. 4 an occlusal view of the skeletal structure of a tooth bridge,

Fig. 5 a cavital view of the skeletal structure of a tooth bridge,

Fig. 6 the clamping situation of a skeletal structure model for digitisation,

Fig. 7 the clamping situation for an unmachined blank,

Fig. 8 the clamping situation before separation of a produced blank, and

Fig. 9 the clamping situation for digitising a skeletal structure model of a tooth crown.

Delete the paragraph bridging Pages 3 and 4 and substitute the following paragraph:

DETAILED DESCRIPTION

Starting from a dental preparation of the dental stump, a mould is made which gives a negative model of the situation in the patient's mouth, in particular the surface of the dental stump or stumps, the approximal surfaces of the neighbouring teeth and the counter-bite. Proceeding from this moulding, a positive model is produced, usually from plaster. On the positive model of the situation is applied a spacer lacquer

which takes into account a gap between the surface of the skeletal structure produced on the basis of the model and the dental stump. Then on the said positive model of the situation in the patient's mouth can be produced a model for the skeletal structure of wax or plastic. This procedure is known and is used in dental technical practice for production of metal skeletal structures for tooth crowns and/or bridges.

Page 10, delete lines 26-37.

Page 11, delete lines 1-9.

Version with markings to show changes made to the abstract

ABSTRACT

[The invention relates to a] A method and a blank for producing artificial dental crowns and/or dental bridges which can fit on at least one prepared stump. The three-dimensional outer and inner surfaces of a positive model of the base frame for the dental crowns and/or for the dental bridges are scanned and digitized. The determined data is linearly expanded around a factor (f), said factor exactly compensating the sinter shrinkage, in all spatial directions. The data is also transmitted to the control electronics of at least one processing machine for processing the blank made of porous ceramic, and the appropriate tool paths are derived therefrom. Material which is temporally decoupled from the digitization is removed from the blank by means of control commands for the tools. Said material is removed until an enlarged finished form of the positive model is produced. This enlarged base frame is tightly sintered to the base frame with direct final measures. Finally, the base frame is individualized by enameling with a coating material made of porcelain or plastic. An information code which is provided for the enlargement factor (f) and which can be detected by a mechaical or human sense organ is placed on the ceramic blank, the packaging thereof, a label or on an instruction leaflet.